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Kansas Department of Health and Environment
Bureau of Air and Radiation
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Construction Permitting -Emergency Equipment & Country Grain Elevators

Public Document: BAR 2004-05

The Bureau of Air and Radiation follows the EPA guidance entitled, "Calculating Potential-to-Emit (PTE) for Emergency Generators," issued by John S. Seitz on September 6, 1995, and the EPA guidance entitled, "Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities," issued by John S. Seitz on November 14, 1995.

Application forms are available for emergency generator approvals on our website at http://www.kdhe.state.ks.us/air-permit/download.html

Prepared by:

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Approved by:

Clark Duffy, Director
Bureau of Air and Radiation

September 6, 1995

MEMORANDUM

SUBJECT: Calculating Potential to Emit (PTE) for Emergency Generators

FROM: John S. Seitz, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Air, Pesticides and Toxics
Management Division, Regions I and IV
Director, Air and Waste Management Division,
Region II
Director, Air, Radiation and Toxics Division,
Region III
Director, Air and Radiation Division,
Region V
Director, Air, Pesticides and Toxics Division,
Region VI
Director, Air and Toxics Division,
Regions VII, VIII, IX, and X

The purpose of this guidance is to address the determination of PTE for emergency electrical generators.

Background

In a memorandum dated January 25, 1995, the Environmental Protection Agency (EPA) addressed a number of issues related to the determination of a source's PTE under section 112 and title V of the Clean Air Act (Act). One of the issues discussed in the memorandum was the term "maximum capacity of a stationary source to emit under its physical and operational design," which is part of the definition of "potential to emit." The memorandum clarified that inherent physical limitations, and operational design features which restrict the potential emissions of individual emission units, can be taken into account. This clarification was intended to address facilities for which the theoretical use of equipment is much higher than could ever actually occur in practice. For such facilities, if their

physical limitations or operational design features are not taken into account, the potential emissions could be overestimated and consequently the source owner could be subject to the Act requirements affecting major sources. Although such source owners could in most cases readily accept enforceable limitations restricting the operation to its designed level, EPA believes this administrative requirement for such sources to be unnecessary and burdensome.

On the topic of "physical and operational design," the January 25 memorandum provided a general discussion. In addition, EPA committed to providing technical assistance on the type of inherent physical and operational design features that may be considered acceptable in determining the potential to emit for certain individual small source categories. The EPA is currently conducting category-specific analyses in support of this effort, and hopes as a result of these analyses to generate more general guidance on this issue as well.

The purpose of this memorandum is to address the issue of PTE as it relates specifically to emergency generators. There is a significant level of interest in this source category because there are many thousands of locations for which an emergency generator is the only emitting source. Moreover, based on a review of this source category, there exists a readily identifiable constraint on the operational design of emergency generators. Hence, the EPA believes it would be useful to provide today's guidance before the entire effort is complete.

The policies set forth in this memorandum are intended solely as guidance, do not represent final Agency action, and cannot be relied upon to create any rights enforceable by any party.

Guidance for Emergency Generators

For purposes of today's guidance, an "emergency generator" means a generator whose sole function is to provide back-up power when electric power from the local utility is interrupted. The emission source for such generators is typically a gasoline or diesel-fired engine, but can in some cases include a small gas turbine. Emissions consist primarily of carbon monoxide and nitrogen oxides. Other criteria pollutants, and hazardous air pollutants, are also emitted, but at much lower levels. Emissions occur only during emergency situations (i.e., where electric power from the local utility is interrupted), and for a very short time to perform maintenance checks and operator training.

The EPA believes that generators devoted to emergency uses are clearly constrained in their operation, in the sense that, by definition and design, they are used only during periods where electric power from public utilities is unavailable. Two factors indicate that this constraint is in fact "inherent." First, while the combined period for such power outages during any one year will vary somewhat, an upper bound can be estimated which would never be expected to be exceeded absent extraordinary circumstances. Second, the duration of these outages are entirely beyond the control of the source, and when they do occur (except in the case of a major catastrophe) rarely last more than a day.

For emergency generators, EPA has determined that a reasonable and realistic "worst-case" estimate of the number of hours that power would be expected to be unavailable from the local utility may be considered in identifying the "maximum capacity" of such generators for the purpose of estimating their PTE. Consequently, EPA does not recommend the use of 8760 hours per year (i.e., full-year operation) for calculating the PTE for emergency generators. Instead, EPA recommends that the potential to emit be determined based upon an estimate of the maximum amount of hours the generator could operate, taking into account (1) the number of hours power would be expected to be unavailable and (2) the number of hours for maintenance activities.

The EPA believes that 500 hours is an appropriate default assumption for estimating the number of hours that an emergency generator could be expected to operate under worst-case conditions. Alternative estimates can be made on a case-by-case basis where justified by the source owner or permitting authority (for example, if historical data on local power outages indicate that a larger or smaller number would be appropriate). Using the 500 hour default assumption, EPA has performed a number of calculations for some typically-sized emergency generators. These calculations indicate that these generators, in and of themselves, rarely emit at major source levels. (Of course, there may be unusual circumstances where these calculations would not be representative, for example where many generators are present that could operate simultaneously).

Cautions

Today's guidance is only meant to address emergency generators as described. Specifically, the guidance does not address: (1) peaking units at electric utilities; (2) generators at industrial facilities that typically operate at low rates, but are not confined to emergency purposes; and (3) any standby

generator that is used during time periods when power is available from the utility. This guidance is also not intended to discourage permitting authorities from establishing operational limitations in construction permits when such limitations are deemed appropriate or necessary. Additionally, this memorandum is not intended to be used as the basis to rescind any such restrictions already in place.

Distribution/Further Information

The Regional Offices should send this memorandum to States within their jurisdiction. Questions concerning specific issues and cases should be directed to the appropriate Regional Office. Regional Office staff may contact Tim Smith of the Integrated Implementation Group at 919-541-4718. The document is also available on the technology transfer network (TTN) bulletin board, under "Clean Air Act" - "Title V" - "Policy Guidance Memos". (Readers unfamiliar with this bulletin board may obtain access by calling the TTN help line at 919-541-5384).

cc: Air Branch Chief, Region I-X
Regional Air Counsels, Region I-X
Adan Schwartz (2344)
Tim Smith (MD-12)

November 14, 1995

MEMORANDUM

SUBJECT: Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities

FROM: John S. Seitz, Director
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Office of Ecosystem Protection, Region I
Director, Air and Waste Management Division, Region II
Director, Air, Radiation, and Toxics Division, Region III
Director, Air, Pesticides, and Toxics Management Division, Region IV
Director, Air and Radiation Division, Region V
Director, Multimedia Planning and Permitting Division, Region VI
Director, Air, RCRA, and TSCA Division, Region VII
Assistant Regional Administrator, Office of Pollution Prevention, State and Tribal Assistance, Region VIII
Director, Air and Toxics Division, Region IX
Director, Office of Air, Region X

The purpose of this guidance is to address the determination of PTE for grain elevators and other issues for grain handling facilities.

Background

In a memorandum dated January 25, 1995, the Environmental Protection Agency (EPA) addressed a number of issues related to the determination of a source's PTE under section 112 and

title V of the Clean Air Act (Act). [Memorandum from John Seitz to EPA Air Directors entitled "Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act," hereinafter referred to as the "January 25 memorandum"]. One of the issues discussed in the memorandum was the term "maximum capacity of a stationary source to emit under its physical and operational design," which is part of the definition of "potential to emit." The memorandum clarified that

inherent physical limitations and operational design features which restrict the potential emissions of individual emission units, should be taken into account. This clarification was intended to address facilities for which the theoretical use of equipment is much higher than could ever actually occur in practice. For such facilities, if their physical limitations or operational design features are not taken into account, the potential emissions could be overestimated and the source owner could be subject to the Act requirements affecting major sources. Although such source owners could accept enforceable limitations restricting the operation to its designed level, the EPA believes this administrative requirement to be unnecessary and burdensome.

On the topic of "physical and operational design," the January 25 memorandum provided a general discussion. In addition, the EPA committed to providing technical assistance on the type of inherent physical and operational design features that may be considered acceptable in determining the potential to emit for certain individual small source categories. The EPA is currently conducting category-specific analyses in support of this effort, and hopes as a result of these analyses to generate more general guidance on this issue as well. The purpose of this memorandum is to address the issue as it relates specifically to grain elevators, and to provide EPA guidance on other issues related to grain handling facilities.

The policies set forth in this memorandum represent official EPA guidance on this issue and are intended to provide guidance to State regulators on methods that the EPA believes are appropriate for sources whose potential emissions are, as a practical matter, restricted by inherent operational limitations. The policies set forth in this memorandum are intended solely as guidance, do not represent final Agency action, and cannot be relied upon to create any rights enforceable by any party.

In addition to today's guidance, there are two additional recent EPA activities that relate to emission calculations for grain elevators and other grain handling facilities. First, the EPA recently issued a policy memorandum entitled "Definition of Regulated Pollutant for Particulate Matter for Purposes of Title V," (Lydia Wegman to Regional Offices, October 16, 1995.) In this memorandum, the EPA recognizes PM-10 as the only regulated form of particulate matter for

purposes of determining applicability to title V major source requirements. Second, the EPA is issuing revised emission calculation methods (interim update to AP-42, section 9.9.1, "Grain Elevators and Processes") The combined result of the October 16 memorandum and the revised emission calculation methods is a substantial reduction in the particulate emission estimates from a given grain elevator and grain handling facilities.

Guidance for Grain Elevators

For purposes of today's guidance, a "country grain elevator" means any grain elevator that receives more than 50 percent of its grain from farmers in the immediate vicinity during the harvest season, and a grain terminal is an elevator that receives grain primarily from other elevators.

Grain elevators emit particulate matter, including PM-10, during the receiving, handling, and shipping of grain. The rate of particulate matter emitted is directly proportional to the amount of grain handled by the elevators.

The EPA recognizes that country grain elevators are clearly constrained in their operation, to the extent that they are designed to service, and as a matter of operation only service, a limited geographic area from which a finite amount of grain can be grown and harvested. Moreover, the principal determinant of which given elevator will be used by a farmer is the proximity of the elevator to the harvest. Consequently, a single elevator services essentially the same geographic area from year to year. The EPA believes that this constraint is "inherent" to the operation of the elevator (i.e., operation of the grain elevator is directly linked to a specific and definable harvest area). The grain handling and storage facilities at grain elevators are designed to handle very large amounts of grain in a relatively short period of time (i.e., at harvest). Although the physical capability exists to handle large amounts of grain throughout the year, such a year-round operation is clearly unachievable as a practical matter and does not occur in reality. Although the amount of grain harvested during any 1 year will vary somewhat, the EPA believes that an estimable and reasonable upper bound can be determined which would never be exceeded absent extraordinary circumstances.

For existing country grain elevators, the EPA has determined that a reasonable and realistic "upper-limit" estimate of the number of bushels of grain projected to be delivered to the elevator may be considered in identifying the "maximum capacity" of such elevators for the purpose of estimating their PTE. Consequently, the EPA does not recommend basing the potential to emit calculation for existing country grain elevators on a throughput estimate based upon year-round operation of the elevator at its maximum rate of operation.

Instead, the EPA recommends that the PTE be determined based upon a more realistic estimate of the maximum amount of grain that could be received during a record crop year in the geographic area served by the elevator. The EPA believes that the highest amount of grain received during the previous 5 years, multiplied times an adjustment factor of 1.2, will constitute a realistic upper bound on the amount of grain a country elevator could receive. The adjustment factor of 1.2 is designed to take into account additional considerations that might affect the maximum harvest including: (1) the possibility that the number of acres harvested in the local area could increase, (for example, if an increased percentage of acres in the growing region became available for planting because of changes in government policy); and (2) increases in crop yields.

The EPA expects that there may be rare cases where the future grain receipts in a given year could exceed the 1.2 times the historical production figure. Where this is the case, the maximum receipt estimate should be recalculated.

> Example: The maximum amount of grain received during the previous 5 years for a given elevator is 2 million bushels. Consequently, the estimate of maximum receipt, to be used for purposes of determining the facility's potential to emit, is 2 x 1.2, or 2.4 million bushels. In some future year, 2.6 million bushels are received. At this point, the maximum receipt estimate becomes 2.6 x 1.2, or 3.1 million bushels.

The EPA believes that this guidance, in combination with the previously mentioned updates to emission calculation methods, will result in few, if any, country grain elevators exceeding the major source threshold for PM-10.

Permitting of Nonmajor Sources

In response to recent questions, the EPA wishes to clarify the requirements of the title V program for nonmajor source grain elevators subject to section 111 or 112 standards. This issue is addressed in 40 CFR part 70, paragraph 70.3(b)(1), which allows States to exempt nonmajor sources from title V permitting until such time as the EPA completes a rulemaking to determine how the program should be structured in the future for nonmajor sources.

For grain elevators over a certain size, there is an existing new source performance standard (i.e., a section 111 standard) that was promulgated during the late 1970s. This same standard also applies to additional agriculturally-related facilities such as flour mills, corn mills (human consumption), and rice mills. Some sources covered by this standard may have potential emissions less than the major source threshold. For these nonmajor sources, as indicated in section 70.3(b)(1), the EPA has granted a temporary exemption from title V permitting. As noted, this temporary exemption from title V permitting is set to expire when the EPA completes a further rulemaking addressing permitting of nonmajor sources. However, it is the EPA's intent that this rulemaking or a separate rulemaking will establish a permanent exemption for grain elevators, feed mills, and other grain handling facilities that are nonmajor sources.

There are currently no applicable section 112 standards for the grain and feed industry. As indicated by paragraph 70.2(b)(2), the EPA will, for any future section 111 or 112 standards that may apply, determine whether to exempt any or all nonmajor sources from the requirement to obtain a title V permit at the time the standard is promulgated.

Facilities with Low Actual Emissions

The EPA also believes it useful to reiterate its policy guidance with respect to sources with low annual rates of actual emissions. In the January 25 memorandum, the EPA announced a 2-year transition policy for plant sites emitting less than 50 percent of the major source threshold. Under this transition policy, sources emitting less than this amount, and keeping adequate records, are not required to be treated by States as major sources for purposes of determining

applicability of title V and section 112 requirements. The transition period in the memorandum expires in January 1997.

The EPA intends to promulgate rulemaking amendments that would extend permanent relief to low-emitting sources, excluding such sources from being classified as "major sources" for purposes of title V permitting. (The exact cutoff for what constitutes a low-emitting source would be determined in the rulemaking process). Such amendments are scheduled for completion before the end of the 2-year transition period. (If the amendments are not promulgated by January 1997, the transition period will be extended for the facilities addressed in this document until the above-mentioned amendments are finalized).

The EPA believes that these provisions for low-emitting sources will ease the regulatory burden for grain elevators, feed mills, and other agriculturally-related facilities. Using the recently adopted (November 1995) interim emission factors for PM-10, even on an uncontrolled basis, the EPA has determined that grain elevators with an actual throughput less than the values listed in Attachment 1 will not exceed 50 percent of the major source threshold. So long as adequate records of annual throughput are kept, sources handling less than those levels are considered by the EPA to be emitting less than the 50 percent cutoff and can be exempted from title V. Because these facilities are often well controlled, many grain terminals with greater throughputs will not be subject to title V permitting. In addition, preliminary calculations indicate that only the largest of feed mills are likely to exceed this cutoff.

Consideration of Control Measures

The effect of control devices and measures in grain handling facilities can be taken into account in determining whether a source can be considered a "low-emitting source" as described above, so long as adequate records are kept documenting the proper operation and maintenance of the control devices and measures.

The EPA and the grain industry are working to develop estimates of the effectiveness of oil addition as a control measure. The results of this effort should be available by later this year or early next year. Interim guidance on the

effectiveness of oil addition is available in the above-described revisions to section 9.9.1 of AP-42. Consistent with the provisions affecting other types of control devices or measures, the effectiveness of oil addition can be taken into account in determining whether actual emissions are below the cutoff for "low-emitting" facilities as described above.

For sources whose actual emissions exceed the cutoff described above, consistent with the EPA's general PTE policy, the effect of control measures (including oil addition) can be taken into account where those control devices and measures are subject to enforceable limits or are inherent to the operation of the facility. [Control measures that are "inherent" are those which are always being operated and maintained for reasons other than community air quality protection. Examples of inherent control measures would include (a) product collection devices for which the value of the product collected greatly exceeds the cost of the collection device, and (b) devices for which the primary purpose is to improve product quality control, to recover product, or to enhance production operating efficiency (for example, product recovery cyclones associated with operations such as pellet cooling at feed mills).]

There are a number of grain elevators that have "closed loop" systems in which conveyors are completely enclosed essentially from the grain unloading point to the point at which grain is deposited to the bin. Where this is the case, some agencies (for example, the State of Michigan) have made adjustments in the emission estimate to take this into account. The EPA agrees that such adjustments are appropriate, particularly in estimating emissions from the "headhouse" or "internal" portions of the emission factors. Further, in the case of feed mills, there are certain operations which can be totally enclosed. Where this is the case, the emission calculations should take this into account.

Cautions

This guidance is not intended to replace the establishment of operational limitations in permits to construct or operate when such limitations are deemed appropriate or necessary, such as the establishment of PTE limits in a minor source preconstruction permit for sources not yet in operation. (For such sources, there may not be a historical data base on crop production). Additionally, this memorandum is not intended to be used as the basis to rescind any such restrictions already in place.

This guidance should not be interpreted as having any effect on whether new source performance standards apply to a given elevator. The guidance is not intended to prevent any control agency from imposing requirements designed to provide for attainment of the national ambient air quality standards.

Distribution/Further Information

The Regional Offices should send this memorandum to States within their jurisdiction. Questions concerning specific issues and cases should be directed to the appropriate Regional Office. Regional Office staff may contact Tim Smith of the Integrated Implementation Group at 919-541-4718. The document is also available on the technology transfer network (TTN) bulletin board, under "Clean Air Act, Title V, Policy Guidance Memos." (Readers unfamiliar with this bulletin board may obtain access by calling the TTN help line at 919-541-5384).

Attachment

cc: Chief, Air Branch, Regions I-X

Grain Throughput associated with Uncontrolled PM-10 emissions of 50 tons/yr

Type of shipping/receiving	Grain	Total throughput (bushels)
Truck or rail receiving/truck or rail shipping	Wheat Corn/soybeans Milo (sorghum)	32 million 14 million 20 million
Truck or rail receiving/barge shipping	Wheat Corn/soybeans Milo (sorghum)	24 million 10 million 15 million
Barge receiving/ship shipping	Wheat Corn/soybeans Milo (sorghum)	10 million 4.0 million 6.1 million
Truck or rail receiving/ship shipping	Wheat Corn/soybeans Milo (sorghum)	17 million 7.1 million 10 million

Notes:

1. This table indicates, based upon the EPA's recommended interim emission factors, the throughput associated with 50 tons per year of uncontrolled PM-10 emissions, which is 50 percent of the major source threshold for PM-10. (For a small number of geographic locations designated as serious PM-10 nonattainment areas, the major source threshold is 70 tons per year. For any elevators located in such areas, the above number should be multiplied times 0.7).

2. The estimates take into account: (a) receiving, (b) internal grain handling emissions, (c) bin vents, and (d) shipping. These are the sources that are generally present at a given terminal. If there are other significant sources of PM-10 at a given terminal, these would need to be considered.

3. Calculations assume density of wheat = 60 lb/bushel. Density of corn, soybeans, milo (sorghum) = 56 lb/bushel.